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EXAMINER	
LOVEL, KIMBERLY M	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/802,615	CHO ET AL.	
	Examiner	Art Unit	
	KIMBERLY LOVEL	2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 June 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4,6-9,12-18,20-26 and 35-60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4, 6-9, 12-18, 20-26 and 35-60* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 4, 6-9, 12-18, 20-26 and 35-60 are currently pending.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 21 June 2010 has been entered.

Claim Objections

3. Claim 12 is objected to because of the following informalities: limitation b) states "**a an** article's". Appropriate correction is required.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claim 4 is directed towards a method for constructing a knowledge representation that includes selecting scientific articles, extracting information, formatting the information, verifying the information and storing the facts. According to *In re Bilski* "The Supreme Court ... has enunciated a definitive test to determine whether

a process claim is tailored narrowly enough to encompass only a particular application of a fundamental principle rather than to preempt the principle itself. A claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." According to the specification, each of the steps can be performed by a user. The computer fails to perform the process and instead is merely being utilized to store the articles and the facts. Therefore, the process is construed as not being tied to a particular machine or apparatus. Since the claim fails to meet the requirements mentioned above, the claim fails to fall within one of the four statutory categories (i.e., process, machine, manufacture, or composition of matter).

Dependent claims 6-9, 48-55, 57 and 60 fails to overcome the deficiencies of claim 4 and therefore are rejected on the same grounds as claim 4.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 4, 7, 9, 12-14, 18, 20-24, 37-43, 46-48, 54, 55 and 57-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No 6,263,335 to Paik et al (hereafter Paik) in view of US Patent No 6,598,043 to Baclawski (hereafter Baclawski) in view of the article "The Knowledge Model of Protégé-2000:

Combining Interoperability and Flexibility" to Noy et al (hereafter Noy) in view of the article "Object Role Modeling (ORM/NIAM) to Halpin (hereafter Halpin).

Referring to claim 4, Paik discloses a method for constructing a knowledge representation, the method comprising the steps of:

a) selecting articles [raw documents] to serve as information sources for the knowledge representation [knowledge base], wherein the selected articles are stored on a computer (see column 9, lines 38-60);

b) extracting information, including facts, contained in the articles expressed in an article's natural language [concept-relation-concept triple] (see column 9, line 38 – column 10, line 4 and column 10, lines 35-39);

c) formatting the information, including facts, for storage in the knowledge representation [the KR Format Applier uses KR Format Guideline 112 as a Knowledge base by converting CRCs to a format which can be accepted by the KR scheme] (see column 21, lines 13-27); and

f) storing the formatted facts in the knowledge representation [indexed and stored in a KR database 115] (see column 9, lines 38 – column 10, line 4).

While Paik teaches the concept of extracting information from articles [documents], Paik fails to explicitly disclose that the articles are scientific articles. It would have been obvious to one of ordinary skill in the art to utilize scientific articles as the articles of Paik since Paik column 5, lines 58-65 defines a document as any unit of text and a scientific article is merely a unit of text. Furthermore, it would have also been obvious to one of ordinary skill in the art since the type of data is considered to merely

be merely nonfunctional descriptive material that fails to impact the actual steps of the process since the outcome of the execution of the steps is independent of the type of data being processed.

While Paik discloses the translation of CRC's to a Knowledge Representation (KR) scheme through the use of a KR Format Guideline 112 as a knowledge base by converting the CRCs to a format which can be accepted by the KR scheme (see column 21, lines 13-27), Paik fails to explicitly disclose the further limitations wherein c) the information, including the facts are formatted for storage according to an ontology comprising classes and individuals; d) verifying that the formatted information, including the facts, extracted from the selected articles is correct; and e) verifying that formatted information, including facts, extracted from the selected articles is placed in the correct format for storage in the knowledge representation. Baclawski discloses the generation of a knowledge representation from an information source (see column 5, lines 42-50), including the further limitation of the information, including facts are formatted for storage according to an ontology [the knowledge extractor 102 may also use an ontology 104 to assist in the knowledge extraction process; the graph structures that represent the knowledge representations conform to an ontological data model that determines the kinds of components and attribute values that are allowed] (see column 5, 47-52 and column 6, lines 22-28) and storing the formatted information, including the facts in the knowledge representation [generation of a knowledge representation] (see column 5, 47-52 and column 6, lines 22-28).

It would have been obvious to one of ordinary skill in the art to utilize an ontology as disclosed by Baclawski to format the CRCs disclosed by Paik. One would have been motivated to do so since the CRCs disclosed by Paik conform to a data model when stored and an ontology is merely a data model at the domain level (Baclawski: see column 2, lines 28-47).

While the combination of Paik and Baclawski (hereafter Paik/Baclawski) discloses the use of an ontology, Paik/Baclawski fails to explicitly disclose wherein the ontology comprises classes and individuals. Noy discloses a frame-based system with an ontology (see abstract and Section 2: Protégé-2000 Knowledge Model), including the further limitation wherein the ontology comprises classes [classes] and individuals [instances] (Section 2: Protégé-2000 Knowledge Model and Section 2.1: Classes and Instances).

It would have been obvious to one of ordinary skill in the art to apply the components of an ontology as described in Noy to the ontology of Paik/Baclawski. One would have been motivated to do so since it is well-known in the art that classes and individuals are basic components that make up an ontology.

While the combination of Paik/Baclawski and Noy (hereafter Paik/Baclawski/Noy) discloses that the knowledge representation 206 may be presented to the user for editing and modification and for confirmation of the form of the knowledge representation (Baclawski: see column 7, lines 13-19), Paik/Baclawski/Noy fails to explicitly disclose the further limitations of verifying that the formatted information, including the facts extracted from the selected articles are correct; and verifying that the

facts extracted from the selected articles are placed in the correct format for storage in the knowledge representation. Halpin discloses the concept of object-role modeling, which is the storage of concepts as objects and the roles that the objects play (see page 1, Section 1.1: ORM: what is it and why we use it?), including the further limitations of

verifying that the information, including facts extracted from the selected articles are correct [as a quality check at Step 1, we can ensure that objects are well identified] (see page 6, 2nd paragraph); and

verifying that the formatted information, including facts extracted from the selected articles are placed in the correct format for storage in the knowledge representation [as a second quality check at step 1] (see page 6, 3rd paragraph).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the quality checking steps disclosed by Halpin in order to verify the facts extracted and stored by Paik/Baclawski/Noy. One would have been motivated to do so in order to determine the accuracy of the rules for extraction and thereby increase the ability to provide accurate information to a user.

Referring to claim 7, while the combination of Paik/Baclawski/Noy and Halpin (hereafter Paik/Baclawski/Noy/Halpin) discloses the steps of extracting and verifying (Halpin: page 6, see paragraphs 2-5), Paik/Baclawski/Noy/Halpin fails to explicitly disclose the method of claim 4 or claim 60 wherein at least the steps of extracting and verifying occur in geographically separated locations.

It would have been obvious to one of ordinary skill in the art at the time of the invention to allow the steps of extracting and verification to take place in different

locations, since the systems of Paik/Baclawski/Noy/Halpin are networked. It is well-know in the art that networked systems allows different individuals to conduct parts of a process from different locations. One would have been motivated to do so in order to increase the availability of experts by allowing them to live and work from anywhere.

Referring to claim 9, Paik/Baclawski/Noy/Halpin discloses the method of claim 4 or claim 60, wherein the extracting information step includes using a computer-driven parser [syntactic parser] of natural language (Paik: see column 9, lines 53-60).

Referring to claim 12, Paik discloses a system for extracting information from articles originating from a first database and storing the extracted information in a second database, the system comprising:

an information extractor [Extractor 105] that extracts a finding from an article's natural language and translates this finding into a structured finding for storage, wherein the information extractor is an application program (see column 9, line 38 – column 10, line 4 and column 10, lines 35-39);

an information extractor that extracts an article's natural language for storage, wherein the information extractor is an application program (see column 16, lines 25-28; column 21, lines 28-35; and column 25, lines 3-22) and

formatting the facts for storage in the second database for storage in the second database [the KR Format Applier uses KR Format Guideline 112 as a Knowledge base by converting CRCs to a format which can be accepted by the KR scheme] (see column 9, line 38 – column 10, line 4 and column 21, lines 13-27);

a computer system in communication with the second database for storing the structured finding in the second database [indexed and stored in a KR database 115] (see column 9, lines 38 – column 10, line 4).

While Paik teaches the concept of extracting information from articles [documents], Paik fails to explicitly disclose that the articles are scientific articles. It would have been obvious to one of ordinary skill in the art to utilize scientific articles as the articles of Paik since Paik column 5, lines 58-65 defines a document as any unit of text and a scientific article is merely a unit of text. Furthermore, it would have also been obvious to one of ordinary skill in the art since the type of data is considered to merely be merely nonfunctional descriptive material that fails to impact the actual steps of the process since the outcome of the execution of the steps is independent of the type of data being processed.

While Paik discloses the translation of CRC's to a Knowledge Representation (KR) scheme through the use of a KR Format Guideline 112 as a knowledge base by converting the CRCs to a format which can be accepted by the KR scheme (see column 21, lines 13-27), Paik fails to explicitly disclose the further limitations wherein the facts are formatted for storage according to an ontology comprising classes and individuals; verifying that the information facts extracted from the selected articles are correct; and verifying that the facts extracted from the selected articles are placed in the correct format for storage in the knowledge representation. Baclawski discloses the generation of a knowledge representation from an information source (see column 5, lines 42-50), including the further limitation of the facts are formatted for storage according to an

ontology [the knowledge extractor 102 may also use an ontology 104 to assist in the knowledge extraction process; the graph structures that represent the knowledge representations conform to an ontological data model that determines the kinds of components and attribute values that are allowed] (see column 5, 47-52 and column 6, lines 22-28) and storing the formatted facts in the knowledge representation [generation of a knowledge representation] (see column 5, 47-52 and column 6, lines 22-28).

It would have been obvious to one of ordinary skill in the art to utilize an ontology as disclosed by Baclawski to format the CRCs disclosed by Paik. One would have been motivated to do so since the CRCs disclosed by Paik conform to a data model when stored and an ontology is merely a data model at the domain level (Baclawski: see column 2, lines 28-47).

While the combination of Paik and Baclawski (hereafter Paik/Baclawski) discloses the use of an ontology, Paik/Baclawski fails to explicitly disclose wherein the ontology comprises classes and individuals. Noy discloses a frame-based system with an ontology (see abstract and Section 2: Protégé-2000 Knowledge Model), including the further limitation wherein the ontology comprises classes [classes] and individuals [instances] (Section 2: Protégé-2000 Knowledge Model and Section 2.1: Classes and Instances).

It would have been obvious to one of ordinary skill in the art to apply the components of an ontology as described in Noy to the ontology of Paik/Baclawski. One would have been motivated to do so since it is well-known in the art that classes and individuals are basic components that make up an ontology.

Paik/Baclawski/Noy fails to explicitly disclose the further limitation of a content reviewer in communication with the information extractor for verifying whether the structured finding has been properly formatted for storage in the second database, wherein the content reviewer is an application program. Halpin discloses the concept of object-role modeling, which is the storage of concepts as objects and the roles that the objects play (see page 1, Section 1.1: ORM: what is it and why we use it?), including the further limitation of a content reviewer in communication with the information extractor for verifying whether the structured finding has been properly formatted for storage in the second database, wherein the content reviewer is an application program] (see page 6, 3rd paragraph).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the quality checking steps disclosed by Halpin in order to verify the facts extracted and stored by Paik/Baclawski/Noy. One would have been motivated to do so in order to determine the accuracy of the rules for extraction and thereby increase the ability to provide accurate information to a user.

Referring to claim 13, Paik/Baclawski/Noy/Halpin discloses the system of claim 12, further comprising a query management and information display unit for responding to user inquiries for information stored in the second database and for retrieving information from the second database in response to those queries (Paik: see column 4, line 64 – column 5, line 2).

Referring to claim 14, Paik/Baclawski/Noy/Halpin discloses the system of claim 12, wherein the second database is frame-based (Paik: see column 6, lines 48-54; Noy: see Section 2: Protégé-2000 Knowledge Model).

Referring to claim 18, Paik/Baclawski/Noy/Halpin discloses the system of claim 12, wherein the finding is derived from one or more sentences, a portion of a sentence, a diagram, figure or table (Paik: see column 9, lines 53-60 – raw text document; and Halpin: see page 5, Table 2 - table).

Referring to claim 20, Paik/Baclawski/Noy/Halpin discloses the system of claim 12, wherein the first database [knowledge base] is coupled to, and in communication with the information extractor (Paik: see Fig 1).

Referring to claim 21, Paik/Baclawski/Noy/Halpin discloses the system of claim 12, further including a server, for selecting articles [raw documents] for information extraction from among a plurality of articles residing in the first database (Paik: see column 9, lines 53-60).

Referring to claim 22, Paik/Baclawski/Noy/Halpin discloses the system of claim 12, wherein the article's representation of the finding has a first format and wherein the translation of the finding includes a translation of the finding into a natural language having a second format (Paik: see column 9, line 61 – column 10, line 4).

Referring to claim 23, Paik/Baclawski/Noy/Halpin discloses the system of claim 12, wherein information is extracted using a user template [database template] (see Paik: column 2, lines 51-67).

Referring to claim 24, Paik/Baclawski/Noy/Halpin discloses the system of claim 12, wherein information is extracted using a computer driven parser [syntactic parser] of natural language (Paik: see column 9, lines 53-60).

Referring to claim 37, Paik discloses a system comprising:

a) a server configured to:

1) select an article [raw documents] from a database for extraction (see column 9, lines 38-60);

2) assign an article to an information extractor [CRC extractor 105] for extraction of information from an article [concept-relation-concept triple] (see column 9, line 38 – column 10, line 4 and column 10, lines 35-39) and for extraction of natural language from the article (see column 16, lines 25-28; column 21, lines 28-35; and column 25, lines 3-22); and

3) receive information extracted by information extractor (see column 9, line 38 – column 10, line 4)

b) an information store [KR database 115] for storing the extracted information (see column 9, line 38 – column 10, line 4).

While Paik discloses the translation of CRC's to a Knowledge Representation (KR) scheme through the use of a KR Format Guideline 112 as a knowledge base by converting the CRCs to a format which can be accepted by the KR scheme (see column 21, lines 13-27), Paik fails to explicitly disclose the further limitations wherein the facts are formatted for storage according to an ontology comprising classes and individuals; verifying that the information facts extracted from the selected articles are correct; and

verifying that the facts extracted from the selected articles are placed in the correct format for storage in the knowledge representation. Baclawski discloses the generation of a knowledge representation from an information source (see column 5, lines 42-50), including the further limitation of the facts are formatted for storage according to an ontology [the knowledge extractor 102 may also use an ontology 104 to assist in the knowledge extraction process; the graph structures that represent the knowledge representations conform to an ontological data model that determines the kinds of components and attribute values that are allowed] (see column 5, 47-52 and column 6, lines 22-28) and storing the formatted facts in the knowledge representation [generation of a knowledge representation] (see column 5, 47-52 and column 6, lines 22-28).

It would have been obvious to one of ordinary skill in the art to utilize an ontology as disclosed by Baclawski to format the CRCs disclosed by Paik. One would have been motivated to do so since the CRCs disclosed by Paik conform to a data model when stored and an ontology is merely a data model at the domain level (Baclawski: see column 2, lines 28-47).

While Paik/Baclawski discloses the use of an ontology, Paik/Baclawski fails to explicitly disclose wherein the ontology comprises classes and individuals. Noy discloses a frame-based system with an ontology (see abstract and Section 2: Protégé-2000 Knowledge Model), including the further limitation wherein the ontology comprises classes [classes] and individuals [instances] (Section 2: Protégé-2000 Knowledge Model and Section 2.1: Classes and Instances).

It would have been obvious to one of ordinary skill in the art to apply the components of an ontology as described in Noy to the ontology of Paik/Baclawski. One would have been motivated to do so since it is well-known in the art that classes and individuals are basic components that make up an ontology.

Paik/Baclawski/Noy fails to explicitly disclose the further limitations of 4) assign the article and extracted information to a content reviewer; and 5) receive corrections to extracted information from the content reviewer. Halpin discloses information to be structured into at least an object, process and a relationship between the object and process object that are related by a process [objects that play roles] (see page 1, Section 1.1: ORM: what is it and why we use it?); 4) assign the article and extracted information to a content reviewer [quality check] (page 6, paragraphs 2-5); and 5) receive corrections to extracted information from the content reviewer (page 6, paragraphs 2-5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the quality checking steps disclosed by Halpin in order to verify the CRC triples extracted and stored by Paik/Baclawski/Noy. One would have been motivated to do so in order to determine the accuracy of the rules for extraction and thereby increase the ability to provide accurate information to a user.

Referring to claim 38, Paik/Baclawski/Noy/Halpin discloses the system of claim 37, further comprising the server configured to: 1) assign the article to an information model structure reviewer; 2) receive changes or updates to information model structure from the information model structure reviewer; and 3) store changes or updates to

information model structure in the information store (Halpin: see page 6, paragraphs 2-6).

Referring to claim 39, while the combination of Paik/Baclawski/Noy and Halpin (hereafter Paik/Baclawski/Noy/Halpin) discloses the steps of extracting and verifying (Halpin: page 6, see paragraphs 2-5), Paik/Baclawski/Noy/Halpin fails to explicitly disclose the system of claim 37 wherein at least the steps of extracting and verifying occur in geographically separated locations.

It would have been obvious to one of ordinary skill in the art at the time of the invention to allow the steps of extracting and verification to take place in different locations, since the systems of Paik/Baclawski/Noy/Halpin are networked. It is well-know in the art that networked systems allows different individuals to conduct parts of a process from different locations. One would have been motivated to do so in order to increase the availability of experts by allowing them to live and work from anywhere.

Referring to claim 40, Paik/Baclawski/Noy/Halpin discloses the system of claim 37, wherein the server is further configured to receive information about quality control metrics (Halpin: see page 6, paragraphs 2-6).

Referring to claim 41, Paik/Baclawski/Noy/Halpin discloses the system of claim 40, wherein the server is further configured to store information about quality control metrics in the information store (Halpin: see page 6, paragraphs 2-6).

Referring to claim 42, Paik/Baclawski/Noy/Halpin discloses the system of claim 37, wherein the server is further configured to comprise a query management and information display unit for responding to user inquiries for information stored in the

information store and for retrieving information from the information store in response to those queries (Paik: see column 4, line 64 – column 5, line 2).

Referring to claim 43, Paik/Baclawski/Noy/Halpin discloses the system of claim 37, wherein the information store is frame-based (Paik: see column 6, lines 48-54; Noy: see Section 2: Protégé-2000 Knowledge Model).

Referring to claim 46, Paik/Baclawski/Noy/Halpin discloses the system of claim 37, wherein the structured information is derived from one or more sentences, a portion of a sentence, a diagram, figure or table (Paik: see column 9, lines 53-60 – raw text document; and Halpin: see page 5, Table 2 - table).

Referring to claim 47, Paik/Baclawski/Noy/Halpin discloses the system of claim 37, wherein the information store includes an ontology (Paik: see Table 3; and Baclawski: see column 5, 47-52 and column 6, lines 22-28).

Referring to claim 48, Paik/Baclawski/Noy/Halpin discloses the method of claim 4, wherein the extracting information step is performed by knowledge extraction personnel and the verifying step is performed by quality control personnel (Halpin: page 6, see paragraphs 2-5).

Referring to claim 54, Paik/Baclawski/Noy/Halpin discloses the method of claim 4, wherein the finding is derived from one or more sentences, a portion of a sentence, a diagram, figure or table (Paik: see column 9, lines 53-60 – raw text document; and Halpin: see page 5, Table 2 - table).

Referring to claim 55, Paik/Baclawski/Noy/Halpin discloses The method of claim 4, wherein the information is extracted using a template [database template] (see Paik: column 2, lines 51-67).

Referring to claim 57, Paik/Baclawski/Noy/Halpin discloses the method of claim 4, wherein the ontology further comprises slots, relations or facets [ontology consists of classes, slots, facets, and axioms] (Noy: see Section 2: Protégé-2000 Knowledge Model, lines 2-5).

Referring to claim 58, Paik/Baclawski/Noy/Halpin discloses the system of claim 12, wherein the ontology further comprises slots, relations or facets [ontology consists of classes, slots, facets, and axioms] (Noy: see Section 2: Protégé-2000 Knowledge Model, lines 2-5).

Referring to claim 59, Paik/Baclawski/Noy/Halpin discloses the system of claim 37, wherein the ontology further comprises slots, relations or facets [ontology consists of classes, slots, facets, and axioms] (Noy: see Section 2: Protégé-2000 Knowledge Model, lines 2-5).

Referring to claim 59, Paik/Baclawski/Noy/Halpin discloses the method of claim 4, further comprising storing the article's natural language in the knowledge representation wherein the stored natural language is selected to provide context for the extracted information, including facts, and wherein the stored natural language maintains the original terminology from the article for the extracted information, including facts [storing the sentence] (Paik: see column 16, lines 25-28; column 21, lines 28-35; and column 25, lines 3-22).

8. **Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No 6,263,335 to Paik et al in view of US Patent No 6,598,043 to Baclawski in view of the article "The Knowledge Model of Protégé-2000: Combining Interoperability and Flexibility" to Noy et al in view of the article "Object Role Modeling (ORM/NIAM) to Halpin as applied to claim 48 above and further in view of US PGPub 20010049671 to Joerg (hereafter Joerg).**

Referring to claim 6, while Paik/Baclawski/Noy/Halpin discloses the method of an expert performing the steps of extracting and verification (Halpin: page 6, see paragraphs 2-5), Paik/Baclawski/Noy/Halpin fails to explicitly teach wherein both the extracting step and verifying step are performed by the same person, wherein the person has been qualified by a predetermined procedure to perform both steps simultaneously. Joerg teaches knowledge extraction, including the further limitation of wherein both the extracting step and verifying step are performed by the same person, wherein the person has been qualified by a predetermined procedure to perform both steps simultaneously (see: [0033]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to train the expert of Paik/Baclawski/Noy/Halpin to extract and verify the facts as taught by Joerg. One would have been motivated to do so in order to streamline the process and reduce the resources required to execute the process by having a person that can perform both steps.

9. **Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No 6,263,335 to Paik et al in view of US Patent No 6,598,043 to Baclawski in view of the article "The Knowledge Model of Protégé-2000: Combining Interoperability and Flexibility" to Noy et al in view of the article "Object Role Modeling (ORM/NIAM) to Halpin as applied to claim 7 above and further in view of US PGPub 2002/0165737 to Mahran (hereafter Mahran).**

Referring to claim 8, while Paik/Baclawski/Noy/Halpin discloses geographically separate locations, Paik/Baclawski/Noy/Halpin fails to disclose the further limitation wherein the locations are chosen based upon the cost of performing the respective steps of extracting and verifying, the lowest cost location for each step being selected. Mahran discloses geographically separate locations are chosen based upon the cost of performing the respective steps of extracting and verifying, the lowest cost location for each step being selected (see [0115]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the calculations disclosed by Mahran with the data of Paik/Baclawski/Noy/Halpin. One would have been motivated to do so in order to decrease the cost of operating the system.

10. Claims 15-17, 25, 26, 35, 36, 44, 45, 49-53 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No 6,263,335 to Paik et al (hereafter Paik) in view of US Patent No 6,598,043 to Baclawski (hereafter Baclawski) in view of the article "The Knowledge Model of Protégé-2000:

Combining Interoperability and Flexibility" to Noy et al (hereafter Noy) in view of the article "Object Role Modeling (ORM/NIAM) to Halpin as applied to claim 4 above, and further in view of the article "Sentence Analysis by Case-Based Reasoning" to Chakkour et al (hereafter Chakkour).

Referring to claims 15 and 44, Paik/Baclawski/Noy/Halpin fails to explicitly disclose the further limitation wherein the structured finding is formatted according to a fact-based model Chakkour discloses extracting information contained in articles [scientific texts] including facts expressed in an article's natural language [natural language processing], including the further limitation wherein the structured finding is formatted according to a fact-based model (Chakkour: see Section 2: From Syntactic to Conceptual Analysis).

It would have been obvious to one of ordinary skill in the art to select articles in which to extract facts and to store the facts disclosed by Chakkour in the manner applied to the concept-relation-concept triples disclosed by Paik/Baclawski/Noy/Halpin. One would have been motivated to do so in order to form a knowledge base in which information can be quickly and efficiently retrieved from in order to provide a user with a response to a query.

Referring to claims 16, 25, 26, 45 and 56, Paik/Baclawski/Noy/Halpin fails to explicitly disclose the further limitation wherein the relationship between the object and process takes the form of the process being an action that acts upon the object. Chakkour discloses extracting information contained in articles [scientific texts] including facts expressed in an article's natural language [natural language processing], including

the further limitation wherein the relationship between the object and process takes the form of the process being an action that acts upon the object (Chakkour: see Section 2: From Syntactic to Conceptual Analysis and Halpin: see page 6, 1st paragraph – the listed examples).

It would have been obvious to one of ordinary skill in the art to select articles in which to extract facts and to store the facts disclosed by Chakkour in the manner applied to the concept-relation-concept triples disclosed by Paik/Baclawski/Noy/Halpin. One would have been motivated to do so in order to form a knowledge base in which information can be quickly and efficiently retrieved from in order to provide a user with a response to a query.

Referring to claim 17, Paik/Baclawski/Noy/Halpin fails to explicitly disclose the further limitation wherein the object can come from a gene, protein, cell, or organism. Chakkour discloses extracting information contained in articles [scientific texts] including facts expressed in an article's natural language [natural language processing], including the further limitation wherein the object can come from a gene, protein, cell, or organism (Chakkour: see Section 2: From Syntactic to Conceptual Analysis).

It would have been obvious to one of ordinary skill in the art to select articles in which to extract facts and to store the facts disclosed by Chakkour in the manner applied to the concept-relation-concept triples disclosed by Paik/Baclawski/Noy/Halpin. One would have been motivated to do so in order to form a knowledge base in which information can be quickly and efficiently retrieved from in order to provide a user with a response to a query.

Referring to claim 35, Paik/Baclawski/Noy/Halpin fails to explicitly disclose the further limitation wherein the object is an effector of a plurality of processes and all of these processes are actions that act upon a second object. Chakkour discloses extracting information contained in articles [scientific texts] including facts expressed in an article's natural language [natural language processing], including the further limitation wherein the object is an effector of a plurality of processes and all of these processes are actions that act upon a second object (Chakkour: see Section 2: From Syntactic to Conceptual Analysis and Halpin: see page 6, 1st paragraph – the listed examples).

It would have been obvious to one of ordinary skill in the art to select articles in which to extract facts and to store the facts disclosed by Chakkour in the manner applied to the concept-relation-concept triples disclosed by Paik/Baclawski/Noy/Halpin. One would have been motivated to do so in order to form a knowledge base in which information can be quickly and efficiently retrieved from in order to provide a user with a response to a query.

Referring to claim 36, Paik/Baclawski/Noy/Halpin fails to explicitly disclose the further limitation wherein the article's natural language includes a first and second finding and wherein the first finding comprises the process and object and the object includes the second finding. Chakkour discloses extracting information contained in articles [scientific texts] including facts expressed in an article's natural language [natural language processing], including the further limitation wherein the article's natural language includes a first and second finding and wherein the first finding

comprises the process and object and the object includes the second finding (Chakkour: see Section 2: From Syntactic to Conceptual Analysis and Halpin: see page 6, 1st paragraph – the listed examples).

It would have been obvious to one of ordinary skill in the art to select articles in which to extract facts and to store the facts disclosed by Chakkour in the manner applied to the concept-relation-concept triples disclosed by Paik/Baclawski/Noy/Halpin. One would have been motivated to do so in order to form a knowledge base in which information can be quickly and efficiently retrieved from in order to provide a user with a response to a query.

Referring to claim 49, Paik/Baclawski/Noy/Halpin fails to explicitly disclose the further limitation wherein the extracted information includes metadata on the facts. Chakkour discloses extracting information contained in articles [scientific texts] including facts expressed in an article's natural language [natural language processing], wherein the facts comprise a first and second physical object that are related by a process (see abstract; Section 2: From Syntactic to Conceptual Analysis; Section 3: The System Using Case-Based Reasoning; and Section 4: Case Retrieval), including the further limitation wherein the extracted information includes metadata on the facts (Chakkour: see Section 2: From Syntactic to Conceptual Analysis).

It would have been obvious to one of ordinary skill in the art to extract metadata as disclosed by Chakkour from the documents disclosed by Paik/Baclawski/Noy/Halpin. One would have been motivated to do so in order to form a knowledge base in which

information can be quickly and efficiently retrieved from in order to provide a user with a response to a query.

Referring to claims 50 and 53, Paik/Baclawski/Noy/Halpin fails to explicitly disclose the further limitation of the facts comprise as an object and process relationship. Chakkour discloses parsing scientific texts in order to index concepts (see abstract), including the further limitations of:

extracting information contained in articles [scientific texts] including facts expressed in an article's natural language [natural language processing], wherein the facts comprise a first and second physical object that are related by a process (see abstract; Section 2: From Syntactic to Conceptual Analysis; Section 3: The System Using Case-Based Reasoning; and Section 4: Case Retrieval); and

formatting the facts as an object and process relationship for storage in the knowledge representation (see Section 2: From Syntactic to Conceptual Analysis and Section 4: Case Retrieval).

It would have been obvious to one of ordinary skill in the art to select articles in which to extract facts and to store the facts disclosed by Chakkour in the manner applied to the concept-relation-concept triples disclosed by Paik/Baclawski/Noy/Halpin. One would have been motivated to do so in order to form a knowledge base in which information can be quickly and efficiently retrieved from in order to provide a user with a response to a query.

Referring to claim 51, the combination of Paik/Baclawski/Noy/Halpin and Chakkour (hereafter Paik/Baclawski/Noy/Halpin/Chakkour) discloses the system of

claim 12, wherein the relationship between the object and process takes the form of the process being an action that acts upon the object (Chakkour: see Section 2: From Syntactic to Conceptual Analysis and Halpin: see page 6, 1st paragraph – the listed examples).

Referring to claim 52, Paik/Baclawski/Noy/Halpin/Chakkour discloses the system of claim 12, wherein the object can come from a gene, protein, cell, or organism (Chakkour: see Section 2: From Syntactic to Conceptual Analysis).

Response to Arguments

11. Referring to Applicant's arguments on page 9 of the Remarks labeled A in regards to claim 4, the Applicants argues the following:

> The Examiner notes that the combination of Paik/Baclawski/Noy fails to explicitly disclose the further limitation of verifying that the information facts extracted from the selected articles are correct; and verifying that the facts extracted from the selected articles are placed in the correct format for storage in the knowledge representation. The Examiner cites Halpin to correct this deficiency. The verification steps of Halpin are concerned with the proper identification of the objects and whether some facts should be split or recombined (see paragraphs 2-3 on page 6).
>
> The verification steps of Halpin do not disclose the amended limitation of verifying that the formatted information, including facts, from the selected articles are correct. Stated differently the question in Halpin is not whether the employee

named Adams A actually uses extension 2345, but whether this information is correctly represented as objects, ie, whether an extension is actually a number or whether a person is actually an entity. Because Halpin fails to teach verifying that the formatted information, including facts, from the selected articles are correct Halpin does not repair the deficiency of Paik/Baclawski/Noy. Applicants respectfully request that the rejection of claim 4 and its dependant claims under 35 U.S.C. §103(a) be withdrawn.

The examiner respectfully disagrees that Halpin fails to teach the claimed limitations. When the limitations are given the broadest reasonable interpretation, it limitation is merely stating that the facts themselves and the formatting of the facts is verified. Halpin performs a quality check on the facts. While Halpin teaches that first quality check ensures that the objects are well identified, this is still considered to meet the requirements of the claimed limitation which states "verifying the formatted information, including facts, extracted from the selected articles is correct" since Halpin is teaching a verification of the objects which make up the fact. Furthermore, the second quality check is considered to meet the requirements of the claimed limitation which is directed towards verifying the format of the facts for the purpose of storage. The idea of determining whether or not the facts of Halpin should be combined or split deals with the concept of storage and formatting of the facts and therefore is considered to meet the requirements of the claimed limitation. It is suggested that the Applicant clearly state the details of the verification steps in the claimed limitations in order to differentiate the claimed invention from Halpin.

Referring to Applicant's argument on page 10 labeled B in regards to claim 60, the Examiner respectfully disagrees that the prior art of record teaches the claimed limitation. Paik teaches in column 16, lines 25-28, column 21, lines 28-35 and column 25, lines 3-22 that the sentences are stored in the knowledge base. It is noted that the sentences are considered to represent the natural language.

Referring to Applicant's argument on page 10 of the Remarks labeled C in regards to claim 6, the argument is moot in view of new grounds of rejection.

Referring to Applicant's arguments on pages 10-11 of the Remarks labeled D in regards to claim 7, the examiner respectfully disagrees that the prior art of record fails to teach the claimed limitation. It would have been obvious to one of ordinary skill in the art at the time of the invention to allow the steps of extracting and verification to take place in different locations, since the systems of Paik/Baclawski/Noy/Halpin are networked. It is well-know in the art that networked systems allows different individuals to conduct parts of a process from different locations. One would have been motivated to do so in order to increase the availability of experts by allowing them to live and work from anywhere.

In regards to the arguments on page 11 labeled E and F, the prior art of record is considered to teach the claimed invention for the reasons stated for the argument labeled D.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KIMBERLY LOVEL whose telephone number is (571)272-2750. The examiner can normally be reached on 9:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on (571) 272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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